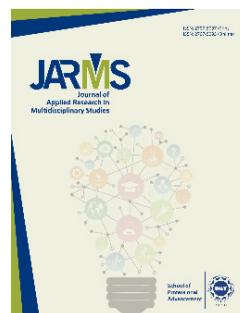
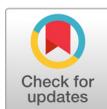


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# Impact of Predictive and Agile Project Management Approaches on Project Success: Mediating Role of Team Work Quality

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## Abstract

The current study aimed to examine the impact of mediating role of Teamwork Quality (TWQ) to determine the relationship between Predictive-Project-Management (PPM), Agile-Project-Management (APM), and Project Success (PS). The study employed a cross-sectional design with survey methodology to analyze the responses of 299 Information Technology (IT) project managers in order to determine the relationships between PPM, APM, and TWQ using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results suggested that both PPM and APM support project success and promote the combination of systematic planning and flexible management processes. In addition, this study demonstrated that TWQ acts as an intermediary variable that supports the connection between PPM, APM, and PS. That is, while PPM and APM can independently produce beneficial effects towards project outcomes; these are also accomplished by enhancing the quality of team-based collaboration. This study provided evidence to Resource-Based Theory (RBT) indicating that effective project management techniques and quality teamwork are organizational resources that assist in creating a sustainable competitive advantage. The results of this study provided useful recommendations to stakeholders to enhance collaborative performance and to blend planned and adaptive project management practices in order to improve project delivery, performance, and overall stakeholder satisfaction. Implications for future research include longitudinal designs, cross-industry comparative analysis, and investigations of other possible intermediate variables, such as leadership style.

**Keywords:** agile project management, mediation, predictive project management, project success, resource-based theory

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## Introduction

Project management methodologies have become more complex with the advancement in technology (Koch et al., [2023](#)). There are different methodologies in use today (Agile and Predictive), each methodology provides different benefits and challenges. Therefore, the selection between methodologies is primarily based upon the type and needs of a particular project (Partarakis et al., [2021](#)). The global project management market was valued at \$4.74 billion in 2023, and it is expected to reach approximately \$9.23 billion by 2032 with a compound annual growth rate of 7.9%. The global software project management market reached \$11.15 billion in 2024, and is expected to reach \$100.61 billion by 2037 with a compound annual growth rate of 18.2% for the period of 2025-2037 (Sten et al., [2020](#)). Due to the increasing adoption of digital and automated project management tools, both markets are expected to grow exponentially (Varma, [2024](#)).

Although the \$7.5 trillion dollar market size represents the total value of projects being managed across the globe, it is not entirely possible to translate this value to Gross Domestic Product (GDP) (Ruk et al., [2019](#)). However, the project management segment contributes significantly to the GDP of the construction, technology, engineering, and services segments (Moros-Daza et al., [2023](#)). According to the research conducted by the Standish Group, project management improves success rates of projects (Al Maalouf & Achi, [2023](#)). Studies showed that success rates improved by 16% while using project management versus traditional methods (Suvvari & Researcher, [2022](#)). Furthermore, studies have shown that agile reduces costs by reducing failure rates and by improving time to market (Wafa et al., [2022](#)). As reported by PMI's Pulse of the Profession survey, organizations implementing proven project management practices wasted 28 times less money than those who failed to implement effective project management (Aizaz et al., [2021](#)). Compared to 2016, the waste of \$97 million for every \$1 billion invested due to poor performance decreased by 20%. In addition, in 2017, 69% of projects achieved their original objectives, and 57% of projects completed the project within budget (Alinezhad et al., [2020](#)). Furthermore, the first ever report on Benefits Realization Maturity identified that organizations performing well in all four performance categories had a 92% success rate, while underperforming organizations had a 33% success rate (Komakech et al., [2024](#)).

Predictive Project Management (PPM) is a linear and structured approach that emphasizes sequential completion of tasks and detailed planning to ensure predictable results (Putrianasari et al., [2024](#)). It is a reliable option for projects with clearly defined requirements that are not expected to change, for instance construction or manufacturing (Vuchkovski et al., [2023](#)). PPM's predictability of results, control over time, cost, resources, risk, and quality give a feeling of security (Aizaz et al., [2021](#)). However, the inflexible nature of PPM in a dynamic environment is significant limitation. Hence, project managers may struggle to keep pace with shifting market dynamics (Marnewick & Marnewick, [2023](#)).

On the other hand, Agile Project Management (APM) is an adaptive and iterative method that works in dynamic environment. It provides opportunities for team for ongoing improvement as well as reacts to new data and requirements during the project's life cycle (Ndou et al., [2024](#)). The iterative aspect of APM facilitates in quick delivery and regular updates, incorporating changing requirements while maintaining the project on course and facilitates collaboration and customer satisfaction (Elgadi et al., [2019](#)). APM has its own limitations. Although APM can be subject to estimation of costs, requirements for ongoing stakeholder engagement, its potential to enhance collaboration and customer satisfaction are desirable benefits (Marnada et al., [2022](#)).

Both of these approaches have been studied, implemented, and thoroughly researched across numerous sectors and enterprises. PPM provides predictability and stability (Sandstø & Reme-Ness, [2021](#)). It establishes foreseeable needs and requirements, while APM works in changing requirements with lots of uncertainties (Ciric et al., [2019](#)). Most organizations embrace blended practices that draw from both of approaches to ensure optimum project success. Blended practices depend on the project's needs (Putrianasari et al., [2024](#)). PPM is generally used for initial planning, while APM is used for the execution phase depending on the project needs and requirements (Bhuiyan et al., [2022](#)).

### **Study Objectives**

The current study aimed to address the following research objectives:

- To analyze the influence of PPM on PS

- To analyze the influence of APM on PS
- To analyze the mediation of Team Work Quality (TWQ) to determine the relationship between PPM and PS
- To analyze the mediation of TWQ to determine the relationship between APM and PS

### **Research Questions**

The study addressed the following research questions:

- Does PPM influence PS?
- Does APM influence PS?
- Does TWQ mediate the relationship between PPM and PS?
- Does TWQ mediate the relationship between APM and PS?

The findings of this study would have important implications for multiple stakeholders including policymakers and business leaders to project managers, government agencies, non-governmental organizations (NGOs), and academics. Furthermore, the findings would support the development of project management practices across all sectors through the examination of the mediating effect of TWQ on the relationships between PPM, APM, and PS.

### **Literature Review**

PPM methodologies provide project teams with the opportunity to make precise resource allocations and minimize waste. This results in the efficient utilization of both labor and materials resulting in significant cost savings (Aizaz et al., [2021](#)). The larger the project, the more benefit from the use of PPM. Examples of large projects include those involving multiple phases or stages (Kalaiganam et al., [2020](#)).

In addition, a significant limitation of PPM is that it emphasizes compliance to processes and procedures rather than achieving real-world project results (Govindaras et al., [2023](#)). As a result, PPM methodologies may miss potential opportunities and result in inefficient project execution. According to Elgadi et al. ([2019](#)), this can occur when the needs of the project evolve during the course of project execution.

## Hypotheses Development

Based on the above discussion, the following hypothesis can be developed:

*H1: A statistically significant positive relationship exists between PPM and PS.*

APM is known for its ability to adapt to changing requirements. Ogirri et al., 2024 proved that the APM methodologies of Scrum and Kanban are most effective when project needs change rapidly and have a higher success rate in software development industries. Agile methodologies are usually associated with faster releases and continuous delivery due to their iterative nature. According to Chia et al. (2022) and Alinezhad et al. (2020), agile projects typically experience a decrease in development time and time-to-market, especially in technology-driven sectors, such as IT and telecommunications. Agile focuses on regular client communication and feedback, which has direct implications for customer satisfaction.

Piepponen et al. (2022) showed that projects using agile had higher levels of client satisfaction due to the alignment of final outputs with customer needs and expectations. Palfreyman and Morton (2022) conducted research wherein they found that agile teams tend to have much better morale and engagement when compared to other traditional project management frameworks (Sunassee et al., 2020). This is on account of the collaborative environment of agile, which engenders much more communication as well as decision-making power at the team level to make one feel empowered enough (Ndou et al., 2024). APM enables early risk and issues identification. Iterative reviews and retrospectives in agile practices help teams identify and mitigate risks before they escalate hence, there is a better chance of PS (Malik et al., 2023).

Agile focuses on delivering tangible results quickly, however, it can sometimes fail to align closely with long-term strategic goals. Ahmad et al. (2022) observed that agile practices can sometimes neglect the strategic direction of the project, resulting in disconnected outcomes. With team autonomy and self-organization, agile sometimes causes the underutilization of resources outside the core teams of a project. An organizational silo can sometimes keep valuable resources from agile teams, leading to inefficiency (Chia et al., 2022).

Agile's flexible nature may result in scope creep when the control of changing requirements is not exercised enough. Sagar et al. (2022) reported how the continuation of changes to features or the scope of the project at each iteration leads to confusion and delay in final delivery. Agile is good for software development but has not always been successful in other industries, such as construction or manufacturing, where the requirements are fixed and predefined (Lee & Chen, 2023). Agile relies significantly on team collaboration and self-management, however, in some organizational cultures, this could create conflict or ineffective teamwork. Putrianasari et al., 2024 found that poor team dynamics may lead towards failure to meet deadlines and objectives with agile projects. Korhonen et al. (2023) discussed that measuring the success of agile projects is difficult because it can change over time; therefore, the success criteria can shift. Agile evolving nature makes it difficult to define clear, quantifiable success metrics, and such metrics may not align well with organizational goals.

*H<sub>2</sub>: There is a significant relationship between APM and PS*

TWQ is a variable that defines the cooperative behaviors, interpersonal skills, and overall effectiveness of a team. Researchers found this relationship to be significant for PPM with regards to its contribution towards PS (Aghimien et al., 2019). PPM incorporates all-around strategic management of projects based on scope, time, cost, and quality that focuses on the maintenance of stakeholder relationships and effectively managing risks (Arora et al., 2023). Conflict resolution was found to be significantly played by TWQ in the study of Layton and Ostermiller (2020). When teams possess high quality interpersonal relationships, they have a better competence in constructive conflict resolution. Thus, this supports smooth PPM process implementations with significant project outcome success. Siddiquei et al. (2022) studied that TWQ improves communication and collaboration among team members. Quality teamwork ensures that PPM processes are communicated well, leading to better decision-making and faster problem-solving, enhancing project success (Priyanto & Wening, 2024). TWQ creates an environment more open to sharing ideas. Pinto et al. (2022) concluded that high teamwork quality increases innovation. This is because the members are more willing to contribute creative solutions that enhance project performance within the PPM framework (Mittal et al., 2024).

According to Empson et al. (2023), high-quality teams are more likely to produce higher-quality outputs. It is particularly important for the PPM framework. This is because the quality of management would determine whether client requirements and expectations are met. Micán et al. (2022) illustrated how TWQ positively impacts the risk management aspect of PPM. Efficient teams identify the risks more promptly and then devise appropriate measures to mitigate it, and, therefore, achieve higher project success. Babu et al. (2023) reported that high TWQ generates accountability and ownership among the members. This consequently enhances the effectiveness of PPM, as it is ensured that individuals own their tasks to improve the project management process efficiently and effectively. Bergman et al. (2022) asserted that although TWQ can enhance collaboration, it also raises the coordination cost, especially in large teams. This may sometimes interfere with the smooth PPM process execution, thereby hindering the output by delaying the PS. High teamwork quality can sometimes lead to conformity and group thinking. According to Priyanto and Wening (2024), teams with strong internal cohesion might avoid voicing dissenting opinions, which can reduce creativity and lead to poor decision-making, negatively impacting PPM's ability to address complex project challenges. Omonije (2024) encouraged collaboration, it can also lead towards role ambiguity in some cases. Teams that work too closely together might fail to clearly define individual responsibilities, which may disrupt the smooth functioning of PPM processes. Zhang and Li (2024) posited that dependence of PPM on the quality of the teamwork may cause other pertinent variables, such as stakeholder management and resource allocation, to be neglected. At times, the strong dynamics can overshadow the overall successful process through comprehensive project management procedures in a team. High-quality teamwork cannot be always achieved within cross-cultural teams (Piwowar-Sulej et al., 2023).

A study conducted by Baptista (2022) showed that the work ethics and styles of communication that exist when members of various cultural backgrounds team up might impede the quality of teamwork thus, negatively impacting the PPM framework. Switzer (2024) concluded that teaming up quality is not sufficient for a successful project. Hence, when the team as well as the PPM process do not receive good support from management, even a high value of TWQ cannot guarantee to result in PS. While, in general, TWQ would better enhance teamwork, (Schultz et al., 2019) revealed that under stress, high-TWQ teams also tend to exhibit

interpersonal conflicts more during peak project pressure periods. These can impede the PPM process and ensure fewer chances of a project being completed successfully.

*H<sub>3</sub>: TWQ mediates the relationships between PPM and PS*

APM has been widely adopted across various industries due to its iterative and flexible approach to handling projects. The need for effective teamwork is part of APM, therefore, the need for collaboration, continuous improvement, and response to change are emphasized within this type of methodology (Verma et al., 2021). Numerous studies have been conducted on APM and its impact on PS, however, very little attention has been given to how the quality of teamwork impacts the relationship between agile practice and project outcomes (Ahlemann et al., 2024).

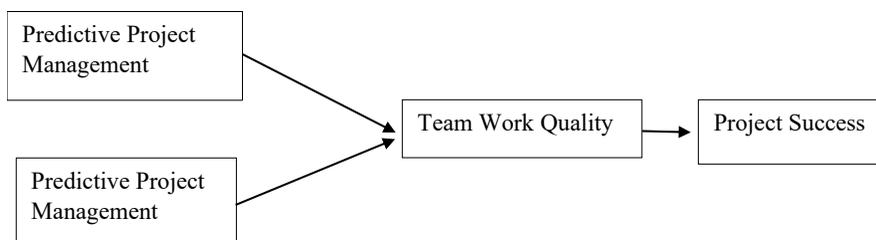
Another aspect of teamwork quality is the level of trust that exists among teammates. Trust enhances decision-making, problem-solving capabilities, fosters more collaboration, and provides more streamlined implementation of agile practices. All these attributes are necessary for the success of agile projects (Priyanto & Wening, 2024). Additionally, psychological safety creates a climate in which team members feel safe and can openly participate and generate new ideas and solutions. Putrianasari et al. (2024) studied the role of psychological safety in agile teams. They determined that teamwork quality acts as a mediator by establishing a supporting environment.

Based on the preceding discussions, the following hypotheses can be formulated:

*H<sub>4</sub>: TWQ acts as a mediator between APM and PS.*

**Figure 1**

*Conceptual Framework*



## Research Methodology

Due to the quantitative nature of the research and the necessity to gather information from a large number of project managers, team members, and other individuals who had experience with project management processes, surveys were used to collect data. Surveys enable the systematic collection of information about the principal variables; namely PPM practices, APM practices, TWQ, and PS.

Survey contained both close ended and Likert scale questions which allowed for the collection of quantifiable responses. Respondents rated their degree of agreement with respect to the use of predictive and agile methodologies, the quality of team work in their respective project teams, and the success of projects relative to pre-defined success factors including time, cost, and quality. All of the above-mentioned variables were measured using a 5-point Likert scale. The electronic version of the survey was distributed to professionals employed in IT organizations implementing predictive and APM approaches to ensure that the data collected was relevant, reliable, and valid to test hypotheses.

The target population for the study included project managers, team leaders, and team members employed by organizations that utilize either predictive or APM methods. A non-probability sampling strategy referred to as convenience sampling was employed, and 299 responses were received from individuals employed in a project-oriented organization.

PLS-SEM, employing an algorithmic approach and bootstrapping techniques, was utilized to assess the relationship between the latent variables. Both measurement and structural models were evaluated to ensure reliability and validity. The findings of the study would be useful to identify the relationships between project management practices and team work quality to determine their impact on PS (Ahlemann et al., [2024](#)).

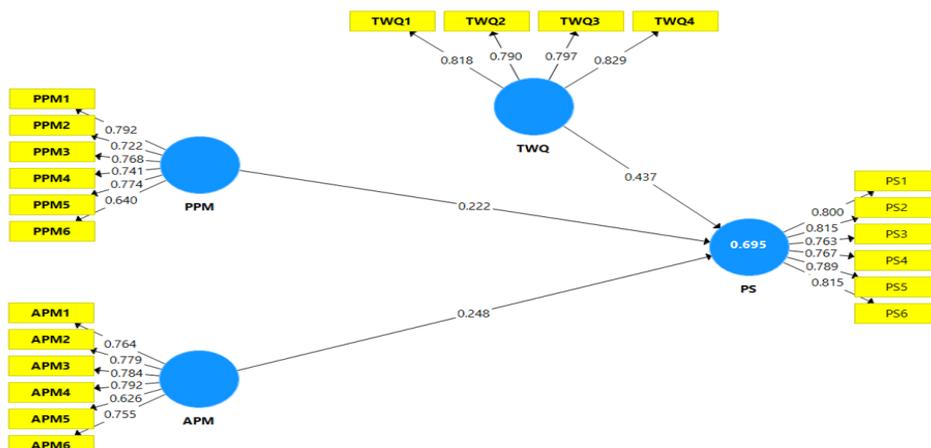
The measurement instruments for PPM practices, APM practices, and TWQ were modified from those presented by Sheedy ([2013](#)). Six items were developed to measure PPM practices, and six items were developed to measure APM practices. Four items were developed to measure TWQ. Six items were developed to measure PS and these items were also developed by Sheedy ([2013](#)). A complete listing of the measurement items for all of the variables can be found in Annexure I.

## Results

**Table 1**  
*Descriptive Statistics*

	<i>M</i>	<i>SD</i>	Kurtosis	Skewness
Thorough_Planning	3.642	1.161	-0.081	-0.819
Clear_Project_Scope	3.642	1.149	-0.194	-0.73
Effective_Risk_Management	3.532	1.194	-0.504	-0.608
Proactive_Change_Management	3.619	1.172	-0.217	-0.764
Utilization of Project Management Tools	3.502	1.178	-0.558	-0.572
Stage-Gate Process Implementation	3.749	1.119	0.068	-0.832
Adherence_to_Standardized Processes	3.338	1.266	-0.935	-0.348
Scope_Adjustments	3.492	1.195	-0.505	-0.607
Uncertainty_Management	3.739	1.136	-0.052	-0.824
Rapid_Response	3.783	1.102	0.161	-0.888
Flexible_Methodology	3.739	1.15	0.251	-0.947
Minimal_Formalization	3.943	1.118	0.591	-1.113
Adaptation_to_Change	3.856	1.108	0.799	-1.138
Team_Cohesion_and_Trust	3.89	1.056	0.64	-1.029
Collaborative_Team_Environment	3.833	1.133	0.272	-0.958
Effective_Team_Communication	3.779	1.014	1.053	-1.074
Transparent_Communication	3.856	1.061	0.509	-0.941
Recognition_and_Rewards_for_Success	3.846	1.135	0.451	-1.02
Project Completion and Closure	3.916	1.105	0.594	-1.075
Project_Achievement	3.642	1.089	0.004	-0.719
Reflection_and_Learning_from Projects	3.799	1.091	0.317	-0.899
Project_Performance_Assessment	3.806	1.101	0.124	-0.877
Client Satisfaction	3.883	1.016	0.876	-1.05

**Figure 2**  
*SEM Model*



**Table 2**  
*R-square*

	<i>R-square</i>	<i>R-square Adjusted</i>
PS	0.695	0.692

Table above provides the *R*-squared and Adjusted *R*-squared for a model where the dependent variable is PS. *R*-squared (0.695) indicates that 69.5% of the variance in PS can be explained by the independent variables in the model. In other words, the model suggests that the variables employed (Team Work Quality, Project Performance Measurement, and Agile Project Management) account for variation observed in PS. An *R*-squared of 0.695 is a reasonably good fit model.

**Table 3**  
*Reliability Test*

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
APM	0.845	0.849	0.886	0.565
PPM	0.834	0.838	0.879	0.549
PS	0.881	0.883	0.910	0.627
TWQ	0.824	0.827	0.883	0.654

**Note.** APM= agile-project-management, PPM= predictive-project-management, PS= project success, TWQ= team work quality

Table above describes the reliability and validity measures for the constructs used in a research model related to project management. The acceptable value of Cronbach's alpha is above 0.7. The results show that the values of Cronbach alpha range from 0.824 to 0.881, indicate high internal consistency for each construct; PPM, APM, PS, and TWQ. These results suggest that the items used to assess each construct were consistent. They measured the same underlying concept.

Similarly, rho\_A values aligned with the Cronbach's alpha values. This further confirmed the internal reliability of the constructs. Composite reliability (CR) values lying between 0.879 and 0.910 also demonstrated high internal consistency. It ensured that the items were reliable measuring the latent constructs.

The acceptable value of Average Variance Extracted (AVE) was more than 0.5. The results showed that AVE values ranging from 0.549 to 0.654 showed significant proportion of the variance in the observed variables as

explained by the corresponding latent constructs. Overall, the table indicates that model is valid and reliable. This means that the constructs are well-measured and suitable for further analysis.

**Table 4**  
*Outer Loadings*

	APM	PPM	PS	TWQ
APM1	0.764			
APM2	0.779			
APM3	0.784			
APM4	0.792			
APM5	0.626			
APM6	0.755			
PPM1		0.792		
PPM2		0.722		
PPM3		0.768		
PPM4		0.741		
PPM5		0.774		
PPM6		0.640		
PS1			0.800	
PS2			0.815	
PS3			0.763	
PS4			0.767	
PS5			0.789	
PS6			0.815	
TWQ1				0.818
TWQ2				0.790
TWQ3				0.797
TWQ4				0.829

**Note.** APM= agile-project-management, PPM= predictive-project-management, PS= project success, TWQ= team work quality

This table demonstrates the standardized loadings of a factor analysis or similar statistical technique that explores the relationship between observed measures and latent concepts. Each row is an observed measure (e.g., APM1, PPM1, PS1, TWQ1), and each column is a latent concept (APM, PPM, PS, TWQ). The table values, or loadings, indicate the strength and direction of the association between each manifest variable and its associated latent construct. Variables would be loaded high (generally

above 0.7, but perhaps 0.5 or 0.6 is acceptable in some situations) onto their intended construct and low onto others, and they must have convergent and discriminant validity.

For instance, APM1, APM2, APM3, APM4, APM5, and APM6 all load considerably high on the APM construct and vary between 0.626 and 0.792. This shows that the variables are good measures of APM. Similarly, PPM variables load on the PPM construct, PS variables on the PS construct, and TWQ variables on the TWQ construct. High loadings of the variables being measured onto their respective constructs suggest that these variables are a good representation of their respective constructs. Evidence against high cross-loadings (where a variable loads highly on more than one construct) suggests distinctness between these constructs. The presence of these loadings helps establish measurement validity for this model, as this suggests the measured variables are accurately and consistently measuring intended underlying constructs. This is an important step in verifying the measures before proceeding with further analysis, such as SEM.

**Table 5**  
*Outer Variance Inflation Factors (VIFs)*

	VIF
APM1	1.822
APM2	1.839
APM3	1.907
APM4	1.830
APM5	1.335
APM6	1.721
PPM1	2.053
PPM2	1.605
PPM3	1.689
PPM4	1.584
PPM5	1.982
PPM6	1.370
PS1	2.045
PS2	2.093
PS3	1.856
PS4	1.842
PS5	1.862
PS6	2.083

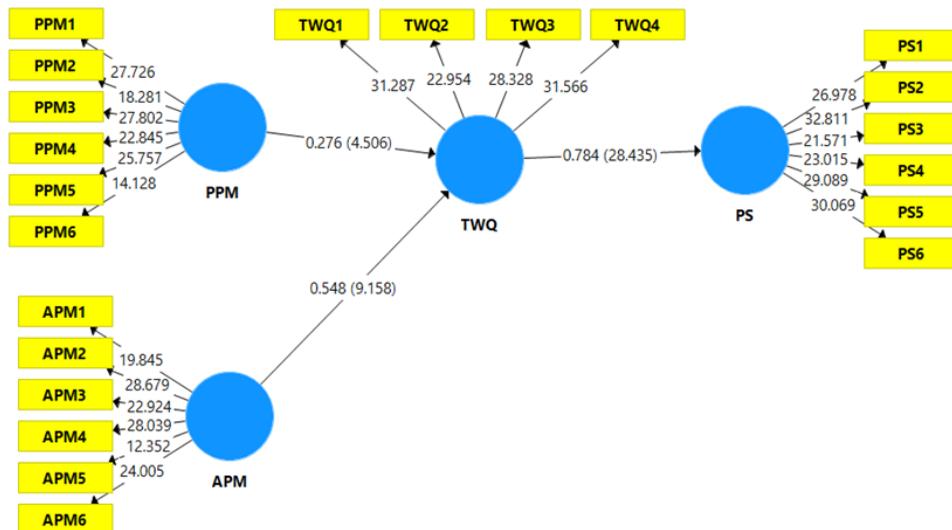
TWQ1	1.981
TWQ2	1.758
TWQ3	1.777
TWQ4	1.789

**Note.** APM= agile-project-management, PPM= predictive-project-management, PS= project success, TWQ= team work quality

This table shows Variance Inflation Factors (VIFs) for a range of variables pertinent to APM, PPM, PS, and TWQ. VIFs measure multicollinearity, where two or more independent variables in a regression model highly correlate. It is a generally accepted rule that VIFs over 5 or 10 represent problematic multicollinearity that may be skewing regression findings.

**Figure 3**

*PLS Bootstrapping SEM Model*



In Table 5, all VIFs are less than 5, indicating that multicollinearity is not a significant issue. More specifically, for the APM variables, VIFs vary from 1.335 to 1.907. For PPM, VIFs vary from 1.370 to 2.053. The PS variables vary from 1.842 to 2.093, and the TWQ variables vary from 1.758 to 1.981. These quite low VIF values suggest that the variables in each construct are not so highly intercorrelated as to create serious problems in any regression analysis. This implies that each variable is adding distinct

information to the model and that the estimates of the effects of each predictor would be quite stable and reliable.

**Table 6**

*Structural Equation Modeling (SEM) Results for the Impact of APM, PPM, and TWQ on Project Success (PS)*

	Original Sample ( <i>O</i> )	Sample Mean ( <i>M</i> )	Standard Deviation (STDEV)	T Statistics (  <i>O</i> /STDEV )	<i>p</i> -values
APM -> TWQ	0.548	0.552	0.060	9.158	0.000
PPM -> TWQ	0.276	0.273	0.061	4.506	0.000
TWQ -> PS	0.784	0.784	0.028	28.435	0.000

Table above shows the outcome of a statistical test, probably investigating the correlations among various constructs in a model. It indicates the original sample path coefficients (*O*), their sample means (*M*), standard deviation (STDEV), t-statistics ( $|O/STDEV|$ ), and *p*-values. In particular, it considers the paths from APM to TWQ, PPM to TWQ, and TWQ to PS. The coefficient from APM to TWQ is 0.548, implying that one additional unit of APM corresponds with an increase in TWQ of 0.548 units. This connection is statistically significant ( $p < 0.000$ ), based on the strong *t*-statistic (9.158) and extremely low *p*-value. In the same manner, the path from PPM to TWQ is 0.276, reflecting a positive relationship between the two constructs and also one that is statistically significant ( $p < 0.000$ ,  $t = 4.506$ ).

Lastly, the path from TWQ to PS is 0.784, reflecting a very strong positive relationship, and once again, this relationship is quite significant ( $p < 0.000$ ,  $t = 28.435$ ). The similarity between the original sample and sample mean values indicates a reliable estimate of the relationships. The large *t*-statistics and small *p*-values for all paths indicate strong statistical support for the hypothesized relationships among these constructs. More simply put, the findings indicate that more effective APM and PPM practices are correlated with higher quality team work, and TWQ improvements are in turn closely linked to increased PS.

## Discussion

This research investigated the impact of PPM and APM on PS. Additionally, it discussed the mediating role of TWQ between two methodologies and PS.

## **Impact of Predictive Project Management (PPM) on PS**

PPM involves detailed planning at the beginning of a project that remain unchanged throughout the life cycle (Vuchkovski et al., [2023](#)). The results indicated that PPM has a significantly positive effect on the success of a project, especially in project environments requiring stability, precision, and adherence to predetermined standards (Ackon et al., [2022](#)). Predictive project managers are able to forecast risks accurately, and develop comprehensive plans that allow them to identify and mitigate potential risks at the earliest possible stage of a project (Bogoeva, [2020](#)).

## **Impact of Agile Project Management (APM) on PS**

APM has autonomous nature of self-organizing teams. This enables the organizations to promote individual accountability. Ultimately it encourages a problem-solving orientation that contributes to improved project performance (Priyanto & Wening, [2024](#)). Sprint reviews and retrospectives allow organizations to correct problems before they become major issues. Feedback mechanisms reduce rework and improve alignment with stakeholder expectations (Putrianasari et al., [2024](#)).

## **Mediating Role of Teamwork Quality (TWQ)**

The findings indicate that the project management methodology is dependent upon how well team members collaborate with one another, as well as the processes and tools used to manage the project (Pandey et al., [2022](#)). High levels of trust, open communication, mutual support, and shared decision-making facilitate the implementation of structured plans in PPM and enable teams to adjust to changes in APM. Effective project planning provides little benefit if team members do not work together to execute the plan, while the iterative processes of APM rely heavily on collaboration and coordination among team members (Gemino et al., [2021](#)). Thus, TWQ serves as a catalyst to magnify the positive effects of both methodologies on project outcomes.

## **Resource-based Theory (RBT) Perspective**

The current study supported RBT by identifying PPM, APM, and TWQ as valuable intangible organizational resources. The findings suggested that competitive advantage in project environments arises not only from adopting appropriate methodologies but also from fostering strong team dynamics (Fernández-Diego et al., [2020](#)). Organizations that invest in open

communication, trust, and role clarity can maximize the strategic value of teamwork, thereby enhancing PS (Korhonen et al., [2023](#)).

## Conclusion

The current study presented quantitative empirical support for the belief that both PPM and APM project management methodologies positively impact PS. The study also supported the claim that TWQ acts as a mediator to help strengthen the relationship between the aforementioned two methodologies. This study was completed using the data collected from 299 project managers in the IT industry, with use of PLS-SEM, to validate RBT in the project management arena. The results indicated that when combined, structured planning, adaptability, and high-quality collaboration positively impact project efficiency, risk reduction, and project outcome.

## Limitations

The limitations of the current study are due to it being a cross sectional study, and the fact that the study sample is industry specific. Therefore, future studies could include longitudinal methods, a larger number of geographic locations, and other potential mediating variables (such as leadership styles, organizational culture and technological advancements, including Artificial Intelligence AI).

## Author Contribution

**Hajira Tahir:** conceptualization, project administration, software, validation, writing – original draft, writing – review & editing. **Mohyuddin Tahir Mahmood:** data curation, methodology, supervision, writing – original draft, writing – review & editing. **Fatima Mushtaq:** formal analysis, resources, visualization, writing – original draft, writing – review & editing.

## Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

## Data Availability Statement

Data supporting the findings of this study will be made available by the corresponding author upon request.

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